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EPA WaterSense

A partnership program of the
U.S. Environmental Protection Agency

February 4, 2022

California Energy Commission
Docket Unit
715 P Street
Sacramento, CA 95814-5512

RE: Docket #21-AAER-01 – Dipper Wells RFI

Dear California Energy Commission:

The U.S. Environmental Protection Agency's (EPA's) WaterSense® program thanks the California Energy Commission (CEC) for the opportunity to provide information on dipper wells. WaterSense is a voluntary partnership program that labels water-efficient products, homes, and services and promotes efficient water use throughout the United States. The WaterSense label is intended to easily identify products and services that use at least 20 percent less water, save energy, and perform as well as or better than standard models on the market. To date, WaterSense has developed specifications for nine plumbing and irrigation product categories, including tank-type toilets, flushometer-valve toilets, urinals, showerheads, lavatory faucets and faucet accessories, pre-rinse spray valves, spray sprinkler bodies, weather-based irrigation controllers, and soil moisture-based irrigation controllers, and has developed additional specifications for homes and irrigation professional certification programs.

WaterSense's goal in submitting information to CEC on dipper wells is to provide it with any research EPA has conducted and publicly available data we have collected to date. Although EPA has not developed a WaterSense specification for dipper wells, through engagement with various stakeholders and partners—including water and energy utilities, manufacturers, and industry professionals—and consideration of these products for potential specification development, we have monitored this product category for some time. EPA also intends to keep abreast of CEC's efforts, particularly as it relates to test method development, since this may provide opportunity for WaterSense specification development in the future.

EPA has identified, and is submitting for consideration, the following studies and information that may be pertinent to CEC's efforts:

- Dipper Well Replacement Field Evaluation Report, prepared by Frontier Energy in November 2017. Frontier Energy also presented the findings of this study and other work related to dipper wells at the WaterSmart Innovations conference in 2017 and the

American Council for an Energy-Efficiency Economy (ACEEE) Hot Water Forum in 2018.
- A WaterSense case study, courtesy of Ecova, highlighting water and energy savings related to dipper wells.
- While dated, Section 4.7 of the *WaterSense at Work* guide of best management practices for water efficiency in commercial and institutional facilities provides background on dipper wells.

Additional academic studies that include pertinent information on dipper wells include:

- Giselle Almeida and Kristen E. Gibson, 2016. "Evaluation of a Recirculating Dipper Well Combined with Ozone Sanitizer for Control of Foodborne Pathogens in Food Service Operations Evaluation of a Recirculating Dip." *Journal of Food Production*. Volume 79, Issue 9: pp 1537-1548. 1 September 2016.
- Kristen E. Gibson and Giselle Almeida, 2015. "Comparison of a continuous flow dipper well and a reduced water dipper well combined with ultraviolet radiation for control of microbial contamination." *Food Control.* Volume 47: pp 301-305. January 2015.

Perceived Path Ahead

As part of any WaterSense product specification, EPA identifies water efficiency and performance criteria that products must meet to earn the WaterSense label. While there are dipper wells in the market that, based on the field surveys and case studies highlighted above, present a clear opportunity for water efficiency, EPA has not identified any existing test protocols that can consistently and repeatably evaluate water use and/or product performance across a variety of product technologies.[1]

EPA historically considers performance in addition to efficiency to ensure public acceptance of the product, longevity of water savings, and consideration of health, safety, and system impacts. To that end, EPA perceives dipper well performance to be related to a product's ability to meet the requirements of the U.S. Food and Drug Administration's Food Code. The existing Food Code (2017) states that food preparation and dispensing utensils shall either be stored: in running water of sufficient velocity to flush particulates to the drain, if used with moist food such as ice cream or mashed potatoes; or in a container of water if the water is maintained at a temperature

[1] The International Association of Plumbing & Mechanical Officials' (IAPMO's) 2021 Uniform Plumbing Code and 2020 Water Efficiency and Sanitation Standard for the Built Environment (WE•Stand) include criteria for dipper well faucet flow rate or volume per faucet cycle. However, these criteria may not adequately address the range of available dipper well technology options that are being considered by CEC.

of at least 135°F and the container is cleaned at a frequency of at least every 24 hours or at a frequency necessary to preclude accumulation of soil residues. Inherent in these requirements is the goal of minimizing potential for accumulation of bacteria and allergens on utensils or within the dipper well basin itself. EPA encourages CEC to consider product performance as part of its rulemaking.

Given EPA's knowledge of the product categories, dipper wells may incorporate different technologies to meet these requirements, including, but not limited to:

- Continuous flow of water at various flow rates
- Basin heating to ensure water temperature is maintained above 135°F
- Incorporation of a user-activated spray function for utensil rinsing
- Ozone disinfection of recirculating water

Any test procedures or requirements related to the water use and performance of dipper wells will need to be capable of including these different technologies.

WaterSense has a long history of working with voluntary consensus standard bodies (e.g., American Society of Mechanical Engineers [ASME], American Society for Testing and Materials [ASTM International]) to develop test methods that address water use or efficiency and product performance. Voluntary consensus-based standard or test method development solicits input and expertise from a variety of stakeholders (e.g., industry, regulatory agencies, testing labs, end users). Therefore, WaterSense recommends that CEC pursue consensus-based test method development as the basis for its appliance efficiency regulation. This would help ensure buy-in from industry and potentially facilitate future alignment of requirements with WaterSense or other specification/standard development related to dipper wells in the future that could further benefit utilities, business owners, and other stakeholders throughout California and the United States. To the extend feasible, WaterSense is willing to participate in the voluntary consensus-based test method development process.

Please contact WaterSense Lead Engineer Stephanie Tanner (tanner.stephanie@epa.gov; 202-564-2660) or the WaterSense Helpline (watersense@epa.gov) to discuss any of the information discussed in this comment submission. Thank you again for the opportunity to comment, and we look forward to discussions moving forward.

Sincerely,

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